

1 **WHAT IS CLAIMED IS:**

2 1. A method for preparing thin integrated circuits having multiple
3 circuit layers comprising the following acts:

4 forming a first circuit layer with multiple sections on a substrate;

5 depositing a resin-copper coating on the first circuit layer;

6 forming a second circuit layer with multiple sections on the resin-
7 copper coating to serve as a topmost circuit layer on the substrate;

8 electrically connecting the first and second circuit layers;

9 connecting electronic components to the topmost circuit layer;

10 applying an encapsulant layer to protect the electronic components;

11 and

12 removing the substrate to expose the first circuit layer.

13 2. The method as claimed in claim 1, wherein multiple dimples are
14 defined in the substrate before the first circuit layer is formed on the
15 substrate including the dimples;

16 whereby the first circuit layer at the dimples become protrusions
17 after the substrate is removed.

18 3. The method as claimed in claim 1, wherein the substrate has a flat
19 top face and the first circuit layer is formed on the substrate in flat.

20 4. The method as claimed in claim 1, wherein the first and second
21 circuit layers are electronically connected by forming microvias through the
22 resin-copper coating from the first circuit layer to the second circuit layer
23 and;

24 forming a conductive layer on the second circuit layer into the

1 microvias to connect between the first and second circuit layers.

2 5. The method as claimed in claim 1, wherein the electronic
3 components are connected to the second circuit layer by bonding metal wires
4 between the electronic components and the second circuit layer.

5 6. The method as claimed in claim 2, wherein the electronic
6 components are connected to the second circuit layer by bonding metal wires
7 between the electronic components and the second circuit layer.

8 7. The method as claimed in claim 3, wherein the electronic
9 components are connected to the second circuit layer by bonding metal wires
10 between the electronic components and the second circuit layer.

11 8. The method as claimed in claim 4, wherein the electronic
12 components are connected to the second circuit layer by bonding metal wires
13 between the electronic components and the second circuit layer.

14 9. The method as claimed in claim 1, wherein the electronic
15 components are connected to the second circuit layer by soldering tin balls
16 between the electronic components and the second circuit layer.

17 10. The method as claimed in claim 2, wherein the electronic
18 components are connected to the second circuit layer by soldering tin balls
19 between the electronic components and the second circuit layer.

20 11. The method as claimed in claim 3, wherein the electronic
21 components are connected to the second circuit layer by soldering tin balls
22 between the electronic components and the second circuit layer.

23 12. The method as claimed in claim 4, wherein the electronic
24 components are connected to the second circuit layer by soldering tin balls

1 between the electronic components and the second circuit layer.

2 13. The method as claimed in claim 1, wherein multiple isolating
3 layers are respectively applied to adjacent sections of the exposed first circuit
4 layer after the substrate is removed and multiple tin-paste layers are
5 respectively applied to the first circuit layer between adjacent isolating layers.

6 14. The method as claimed in claim 2, wherein multiple isolating
7 layers are respectively applied to adjacent sections of the exposed first circuit
8 layer after the substrate is removed and multiple tin-paste layers are
9 respectively applied to the first circuit layer between adjacent isolating layers.

10 15. The method as claimed in claim 3, wherein multiple isolating
11 layers are respectively applied to adjacent sections of the exposed first circuit
12 layer after the substrate is removed and multiple tin-paste layers are
13 respectively applied to the first circuit layer between adjacent isolating layers.

14 16. The method as claimed in claim 4, wherein multiple isolating
15 layers are respectively applied to adjacent sections of the exposed first circuit
16 layer after the substrate is removed and multiple tin-paste layers are
17 respectively applied to the first circuit layer between adjacent isolating layers.

18 17. The method as claimed in claim 1, wherein the method further
19 comprises the following acts before applying the electronic components to
20 the topmost circuit layer,

21 depositing a resin-copper coating on the second circuit layer after the
22 second circuit layer is constructed;

23 forming a third circuit layer with multiple sections on the resin-
24 copper coating to serve as the topmost circuit layer on the substrate;

- 1 electrically connecting the second and third circuit layers; and
- 2 connecting the electronic components to the topmost circuit layer;
- 3 wherein the acts are repeated to increase a consequential circuit layer
- 4 for each time to achieve multiple circuit layers on the integrated circuit.